

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

(12) **UK Patent Application** (19) **GB** (11) **2 239 379** (13) **A**
 (43) Date of A publication 26.06.1991

(21) Application No 9027145.3

(22) Date of filing 14.12.1990

(30) Priority data
 (31) 8915020 (32) 21.12.1989 (33) DE

(71) Applicant
Bosch-Siemens Hausgeräte GmbH
 (Incorporated in the Federal Republic of Germany)
 Hochstrasse 17, 8000 München 80,
 Federal Republic of Germany

(72) Inventors
 Georg Brandl
 Klaus Dengler
 Herbert Steiner

(74) Agent and/or Address for Service
 Dr Walther Wolff & Co
 6 Buckingham Gate, London, SW1E 6JP,
 United Kingdom

(51) INT CL⁶
 H05B 6/80

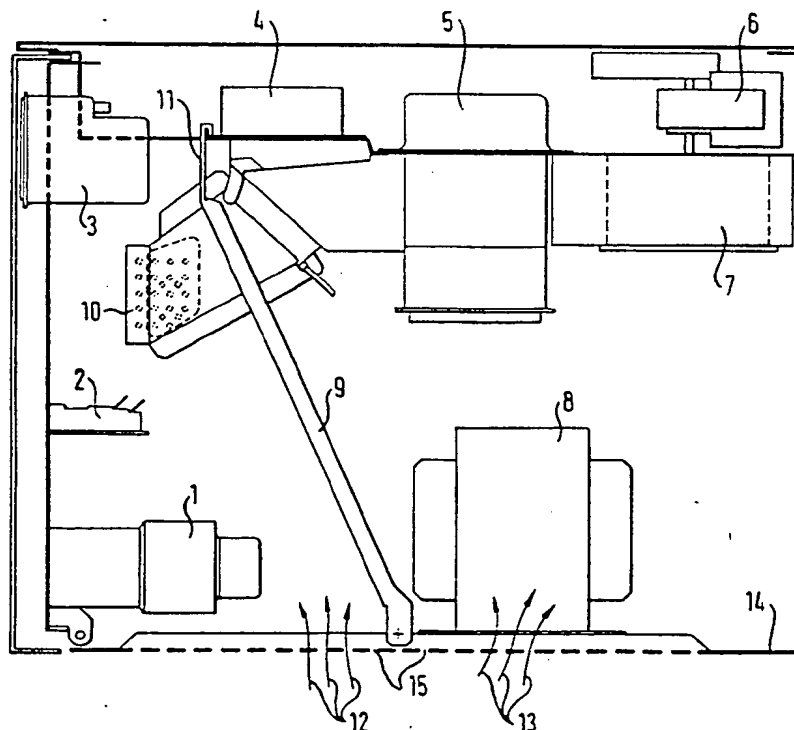
(52) UK CL (Edition K)
 H5H HMF
 U1S S2400

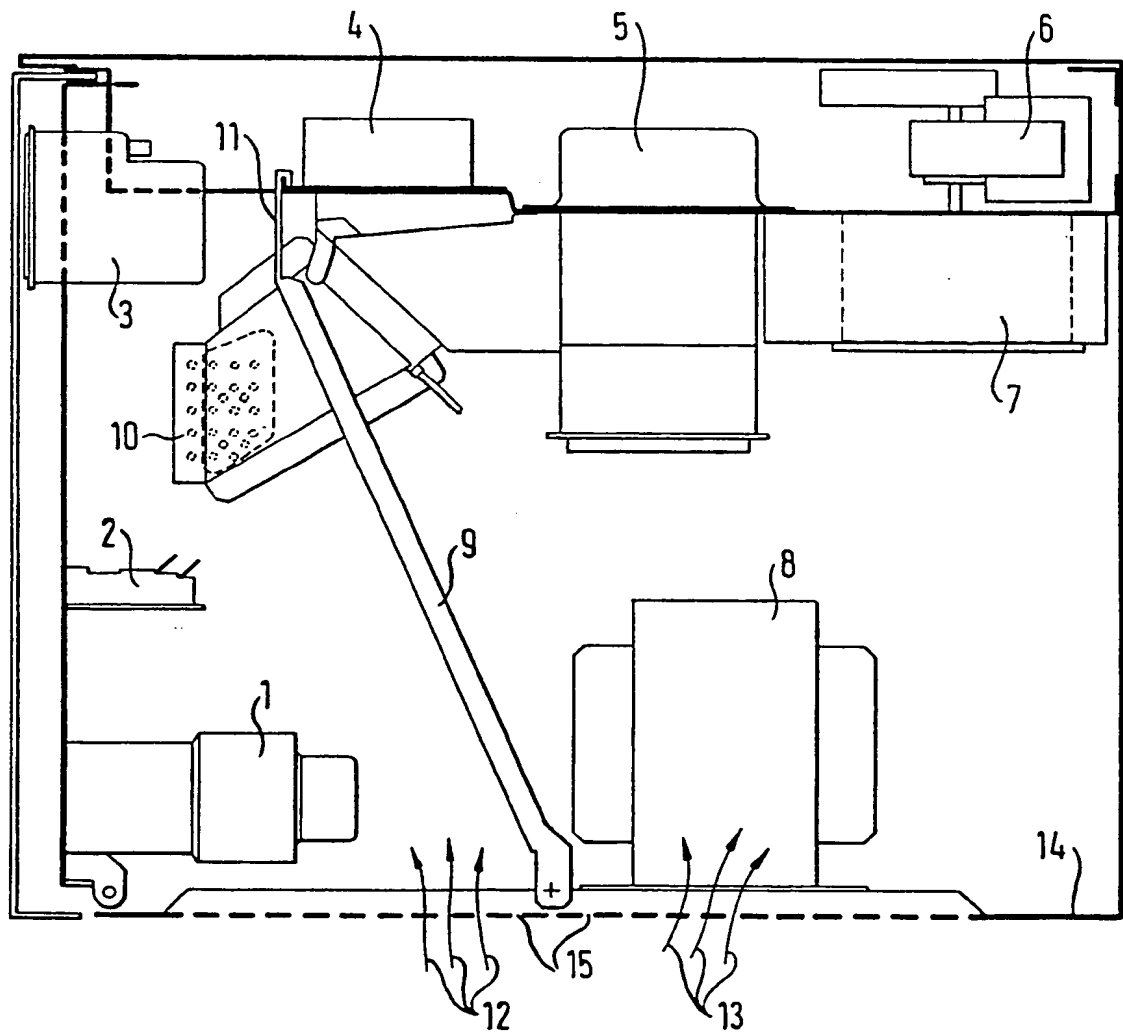
(56) Documents cited
 GB 2230926 A US 4812617 A US 4314126 A
 US 4184945 A

(58) Field of search
 UK CL (Edition K) H5H HMB HMF HMV
 INT CL⁶ H05B
 Online databases: WPI

(54) **Domestic microwave appliance**

(57) A domestic microwave appliance, in particular a cooker, comprises an air cooling system associated with the microwave equipment. A partition 9 is arranged to divide cooling air induced by a fan e.g. radial fan 6 into two parallel cooling air currents 12, 13, which are directed to respective sub-assemblies to be cooled, eg transformer 8 and switches 1, 2 and clock 3. The air currents may combine to cool magnetron 5. The number of openings 15 determines the strength of currents 12, 13.





- 1 -

DOMESTIC MICROWAVE APPLIANCE

The present invention relates to a domestic microwave appliance, especially to a cooker with microwave operation.

In German (Fed. Rep.) Utility Model G 88 06 276.7 there is disclosed
5 an air-cooling arrangement which has a cooling air blower disposed outside the cooking chamber of an oven. At the pressure side, the blower opens into an outlet air channel which communicates with the ambient atmosphere. The height of the connecting opening of the outlet channel is greater than the height of the exhaust opening of the blower. The exhaust open-
10 ing is arranged at the upper boundary of the outlet channel so that, below the exhaust opening, there is left an open residual cross-section into which the exhaust side of a further cooling air system, for example for magnetron cooling, can open. On the one hand, account is taken of the fact that the exhaust air current, at least in the case of a
15 tangential blower, extends obliquely downwards and, on the other hand, an intimate intermixing with the hotter outlet air current of the magnetron can be achieved in the outlet channel. A lower mixed temperature thus results. There remains a need for measures to enable adequate cooling of microwave equipment and adjacent electronic sub-assemblies without
20 requiring substantial constructional change in existing arrangements.

According to the present invention there is provided a domestic microwave appliance provided with a cooling air system comprising a fan operable to induct cooling air and constructional means arranged to divide the inducted air into at least two individually metered air
25 currents flowing in like direction and serving for cooling of respective component regions of the appliance.

Preferably, the constructional means is arranged to divide the

cooling air inducted by a fan into at least two parallel air currents which are related to sub-assemblies and metered differently. Expediently, a partition is arranged between a voltage transformer and a switch front sub-assembly as the constructional means for the control of the cooling
5 air current.

For preference, the fan and the partition produce a cooling air current for an electronic sub-assembly, and preferably also for the transformer. The cooling air currents, which are produced by the fan, can together cool a magnetron. The induction area for each air current
10 can have different inlet opening arrangements as constructional means for the control of cooling air current, such induction areas preferably being defined by a base plate. A close opening pattern, adapted for a maximum cooling air volume, can be arranged in the induction area for the cooling air current of the electronic sub-assembly, and
15 an opening pattern adapted for adequate cooling can be arranged in the induction area for the cooling air current of a microwave unit. The fan can be a radial fan inducting at more than one side.

An embodiment of the present invention will now be more particularly described, by way of example, with reference to the accompanying drawing,
20 the single figure of which is a schematic view of a cooling air system in a domestic microwave appliance embodying the invention.

Referring now to the drawing, there is shown part of a microwave oven, which comprises a switch 1, a switch 2, an electronic clock 3, an electronic unit 4, a magnetron 5, a radial fan 6 with impeller wheel
25 7, a high-voltage transformer 8, a partition 9, an air shaft 10 and a suspension 11 for the partition 9. Through insertion of the partition 9 between the transformer 8 and the switchfront sub-assemblies 1 and 2,

a part of the cooling air inducted by the fan 6 through a metal base plate 14 of the oven does not reach the fan on a direct path, but is guided by way of the switchfront sub-assemblies to the upper induction opening of the fan. By means of the pattern of a first plurality of bores 15 in the base plate 14 in the region of the sub-assemblies 1 and 2, a maximised induction cross-section is provided, whereas by means of the pattern of a second plurality of bores 15 in the base plate 14 in a rearward region thereof a reduced induction cross-section is provided, but the reduction is such that adequate cooling of the transformer 8 and the magnetron 5 can still be achieved. The total air volume inducted by the fan 6 is divided by the partition 9 into a cooling air current 12 and a cooling air current 13, the current 12 serving for the electronic sub-assembly 3 and 4 and the current 13 for the transformer 8. The induction area for each current is associated with a respective one of the two different bore patterns. A closed bore pattern, which is adapted for maximum cooling, is arranged in the induction area for the air current 12 for electronic sub-assembly 3 and 4, whereby it is ensured that this sub-assembly receives an adequate cooling air flow. A hole pattern adapted for adequate cooling is arranged in the induction area for the air current 13 for the high-voltage transformer 8, i.e. just as much cooling air is inducted as is required for cooling.

The air current 12 at the end of its path over the electronic unit 4 has a temperature far below the ambient temperature of the magnetron 5 and is used, together with the air current 13 which has already cooled the transformer 8, for cooling of the magnetron. According to the setting of the air shaft 10, a greater or lesser amount of preheated air from the currents 12 and 13 can be conducted into the cooking chamber or out into the open.

CLAIMS

1. A domestic microwave appliance provided with a cooling air system comprising a fan operable to induct cooling air and constructional means arranged to divide the inducted air into at least two individually
5 metered air currents flowing in like direction and serving for cooling of respective component regions of the appliance.
2. An appliance as claimed in claim 1, the constructional means comprising a partition.
3. An appliance as claimed in claim 2, wherein the partition extends
10 between a voltage transformer of the appliance and a switch sub-assembly of the appliance.
4. An appliance as claimed in claim 2, comprising an electronic sub-assembly arranged to be cooled by one of said currents.
5. An appliance as claimed in claim 2, comprising a voltage transformer
15 arranged to be cooled by one of said currents.
6. An appliance as claimed in any one of the preceding claims, comprising a magnetron arranged to be cooled by both of said at least two currents.
7. An appliance as claimed in either claim 1 or claim 2, the constructional means comprising means defining a respective arrangement of inlet
20 openings for each of said currents.

8. An appliance as claimed in claim 7, wherein the inlet opening arrangements differ from each other in order to provide different metering of the currents.
9. An appliance as claimed in either claim 7 or claim 8, wherein the
5 inlet openings are provided in a base plate of the appliance.
10. An appliance as claimed in claim 7, comprising an electronic sub-assembly arranged to be cooled by one of said currents, the inlet openings associated with that current being disposed in close proximity to each other to allow induction of a maximum air volume for the current.
- 10 11. An appliance as claimed in claim 7, comprising a microwave unit arranged to be cooled by one of said currents, the inlet openings associated with that current being so arranged as to allow induction of an air volume sufficient for the current to have a predetermined cooling effect.
- 15 12. An appliance as claimed in any one of the preceding claims, wherein the fan is a radial fan arranged to be able to induct air at more than one side.
13. An appliance substantially as hereinbefore described with reference to the accompanying drawing.
- 20 14. An appliance as claimed in any one of the preceding claims, wherein the appliance is a cooker.